

XIV. On *DIOPSIS*, a Genus of Dipterous Insects, with Descriptions of Twenty-one Species. By J. O. WESTWOOD, Esq., F.L.S.

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THE immortal man whose name we, as a body, have adopted as our own, terminated his zoological labours by the publication of the "Dissertatio Entomologica, bigas insectorum sistens," scil. *Paussus* and *Diopsis*, as though, to use the words of his countryman Dalman, "Linnæo hoc, ut videtur, erat consilium, ut vellet absolvere illustrem suum cursum entomologicum per productum quoddam insigniter singulare, vix quidquam magis singulare excogitari potuit quam *Paussus* et *Diopsis*."

Of the former of these two genera, in its present state, as a family, I have given a detailed account, which the Linnean Society has done me the honour to publish in the 16th volume of its Transactions. In order to show in some degree my sense of this honour, I have taken up the latter genus, and I now beg to offer to the Society the present memoir as a fitting companion to my former communication; moreover, the now prophetic, but, at the time, erroneous reference by Illiger to the Linnean Transactions for a memoir upon this genus, had a second-rate influence in this choice of subject.

The CHIEF INTEREST of the genus *Diopsis* arises from the extraordinary elongation of the sides of the head into two cylindrical horns, which in some instances are as long as the whole body, and at the extremity of which the eyes, of a semi-globular form, are placed: the antennæ also are inserted near the extremity of these protuberances at a short distance before the eyes. At first sight these horns might easily be mistaken for antennæ; but they are inarticulated at the base as well as along the surface; they have, therefore, no independent motion, their movements being necessarily accompanied by those of the whole head: when, however, we recollect that they contain not only the infinity of nerves of the compound eyes at their extremities, but also those

producing the sensation of which the antennæ are the seat, we can easily imagine how necessary it is that the means of communication with the remainder of the head should be unbroken by articulations.

Linnaeus observes that this genus, on account of these ocular peduncles, is distinguished "non a *Dipteris* solum, sed ab omnibus etiam insectis huc usque mihi cognitis." Since his day, however, other insects have been discovered presenting a somewhat similar formation: of these, the Dipterous genus *Achias*, Fabr., is nearly allied to *Diopsis*, and of this M. Guérin has given an account, illustrated by very good figures, in the first number of his "*Magasin d'Entomologie*," drawn from the original unique specimen described by Fabricius from the cabinet of M. Bosc, which, I am sorry to say, had suffered materially from the ravages of insects when I inspected it at the Jardin des Plantes*. From M. Guérin's figure it is evident, however, that the eyes only in *Achias* are fixed at the extremity of the peduncles, the antennæ being inserted in the middle of the face: the same remark is also applicable to several other insects with long ocular peduncles, which were at first described by Wiedemann as belonging to the genus *Achias*, but subsequently formed by him, in a memoir read at the meeting of German Naturalists in 1830, into distinct genera, namely, the *Plagiocephalus lobularis* and *Zygothrica dispar*, both brought from Brazil by M. Lund; to the latter of which (at least to the female) is also allied the *Trigonosoma perilampiformis* of Gray (Griff. Anim. Kingd., pl. 128.). In like manner the different species of the STREPSIPTEROUS genera *Xenos* and *Stylops*, as also the recently established genus *Halictophagus*, Curt., have the eyes placed upon very short footstalks. The genus *Elenchus*, Curt., however, belonging to the same order, does not appear to be so circumstanced, since Robert Templeton, Esq., who has written and kindly presented to me an account of this genus illustrated by figures, states that the eyes are sessile. Certain male *Ephemeræ* are also remarkable for having a supplemental pair of eyes placed upon short peduncles between the lateral eyes.

In the order HEMIPTERA (*Heteroptera*) De Geer has also figured three spe-

* The existence of this remarkable genus fortunately does not rest upon this single mutilated specimen, since Dr. Horsfield has been kind enough to show me a specimen of a distinct and very beautiful species with maculated wings, captured by himself in Java; and amongst the unascertained species at the East India House I noticed the female of this new species, in which sex the head is not broader than the thorax.

cies of *Cimicidæ* with ocular peduncles, in the 34th plate of his 3rd volume, fig. 17, 24, and 25, all from Surinam; of these, that represented in fig. 17 and 18, and described as the *Cimex lineola* of Linnæus, has been recently raised to the rank of a genus by Hahn under the name of *Largus*, and by Laporte under the name of *Euryophthalmus*. It is the *Cimex humilis* of Drury, *punctatus*, De G., and *puncticollis*, Laporte: the footstalks are very short, at least such is the case in a specimen which I have received from Brazil; but in De Geer's "*Punaise à yeux de Crabe*" (fig. 17.), the peduncles are at least as long as the breadth of the head. The *Astemma cornuta* of St. Fargeau and Serville (*Encycl. Méth.* x. 323.) has also the eyes placed upon peduncles nearly a line long. It is from Cayenne, and appears nearly allied to the latter. In none of the preceding instances, however, do the footstalks acquire the remarkable length which they possess in *Diopsis*, nor are the antennæ situated upon them.

But this lateral prolongation of the head into ocular peduncles is not confined to insects, strictly so called, but is found in a few instances in other classes and orders; and as these instances involve in some degree the doctrine that every affinity is connected with, and must be tested by, a corresponding analogy, I shall detail them, without, however, offering any opinion upon the doctrine itself.

In the class *Crustacea* we find that Dr. Leach applied the term *Podophthalma* to the great typical group containing the Crabs (order *Brachyura*), and Lobsters and Shrimps (order *Macrura*), as well as the genus *Squilla* (order *Stomapoda*), which last he did not consider as entitled to the rank of an order. In all these animals the eyes are carried upon footstalks moveable at the base, so that the eyes are retractile within the anterior cavities of the shell. In some instances, however, they are fixed, as in the Dipterous insects mentioned above. This occurs in the genus *Achæus* of Leach, according to whom* "it is the only known genus of *Brachyura*, except *Leptopodia*, whose eyes are not retractile." To these two genera is very nearly allied the recently established genus *Latreillia* of Roux (*Crustacés de la Méditerr.*, pl. 22.); but the peduncles of the eyes are very long. The preceding are instances from the family of Spider Crabs, *Muidæ*, Westw., or *Crabes triangulaires* of Latreille.

* Leach, *Malacost. Podophth.*, tab. 22.

To these may be added, from the Brachyurous family, *Ocypodidae*, Westw., or *Crabes quadrilatères* of Latreille; the British genus *Gonoplax*, *Cancer angulatus*, Linn.; the American genus *Gelasimus*, and the New Holland one of *Macrophthalmus*, Latr. (*Règne Anim.*, 2nd edit., vol. iv. p. 44.); in all of which the footstalks are disproportionately long: but the greatest elongation in the *Brachyura* takes place in the genus *Podophthalmus*, Latr. (*Portunus Vigil*, Fab., Isle of France), belonging to the family *Canceridae*, Westw. (*Crabes nageurs*, Latr.).

The order *Macrura* does not present any remarkable development in the length of the ocular peduncles in any species with which I am acquainted; but in the next order, *Stomapoda**, two tropical genera, *Lucifer* and *Podopsis*, have recently been described and figured by Mr. Thompson in his "Zoological Researches," remarkable not only for the great length of the peduncles, but also for the attenuated vermiform shape of their bodies and their luminous properties. To these I have added another, nearly allied, with equally long footstalks, under the name of *Stylophthalma*, founded upon a curious species figured by Slabber. The only instance which occurs of pedunculated moveable eyes in the great Crustaceous division of *Entomostraca*, is found in the three genera forming the order *Branchiopoda*. In the class *Arachnida* I have recently characterized a spider from Malabar under the name of *Phoroncidia aculeata*, in which the front of the cephalothorax is produced in front into a thick footstalk, at the extremity of which the eight eyes are placed (*Zool. Journ.* No. 20.). It is nearly allied to the cancriform *Epeire*†. (*Acrosoma*, Perty, *Dil. An.*, art. BRAZ.)

This representative structure, moreover, is not confined to annulose animals, since it exists in other remote groups, and even amongst the higher animals, as though, amongst the *Vertebrata*,—to use the language of a fanciful German author,—the *Squalus Zygaena* of Linnæus had shot through the waves and landed in Java or Brazil, transformed into a Dipterous insect; whilst everybody is aware that amongst the *Testacea* the eyes of the Snails are placed at the extremity of long retractile footstalks.

* The number of remarkable and analogical forms contained in this group appears to me to be conclusive evidence of its rank as an order, although Mr. MacLeay, following Dr. Leach, is of a different opinion.

† The *Epeira curvicauda* of Vauthier, described in the *Annales des Sciences Naturelles*, has the two lateral eyes on each side placed at the extremity of a short common footstalk.

There are other peculiarities of structure, however, in the genus *Diopsis* which contribute to its interest. Of these, the 4 or 6 spines which arm the sides of the thorax and the extremity of the scutellum are remarkable. I am aware of only one Muscoid insect resembling it in this respect, the *Tetanocera bispinosa* of Wiedemann, which has only two spines on the scutellum. Latreille has, however, named an entire Dipterous group (*Stratiomidae*, &c.), from their possessing similar scutellar spines, *Notacantha*; but in none of these are the sides of the thorax spined*. So also the two spines which arm the lower sides of the face, and those placed at the extremity of the four posterior femora, are exclusively confined to this genus, whilst the raptorial structure of the fore legs is not amongst its least interesting characters.

Respecting the CHARACTERS of this genus the most detailed descriptions hitherto given are those of Fabricius, Latreille, and Dalman, upon which, however, a very careful investigation of the *Diopsis Sykesii* has rendered a few observations necessary. Thus, Dalman describes the ANTENNÆ as “vix visibilibiter triarticulatæ—articulo tertio subovato—seta terminato;” whilst Latreille correctly describes them as “compressæ articulis tribus, 1mo, minimo; 2do, cyathiformi; 3tio, suborbiculato;” incorrectly adding, “ad basin setigero,”—the seta being inserted on the upper margin of the third joint near its extremity. As to the TROPHI, the descriptions of Fabricius and Latreille do not coincide, and Dalman was unable to examine their structure so as to clear up the differences. Fabricius says, “Os haud prominens, proboscide, haustello palpisque. Proboscis magna, membranacea, geniculata, retractilis: stipite brevi, cylindrico, capitulo carnosio, bilabiato: laciniis æqualibus, conniventibus. Haustellum absque vagina, seta unica, cornea, setacea, acuta, in canalem dorsalem proboscidis recondenda. Palpi duo, elongati, conici, ad basin setæ inserti:” whilst Latreille merely observes, “Proboscis Muscarum. Palpi breves, cylindrici, subacuminati.” In the *Diopsis Sykesii*, however, the mouth exhibits a more perfect organization than has hitherto been noticed in any of the great second division of the Athericerous *Diptera* to which it belongs, closely resembling, in fact, the structure of Latreille’s first division of the

* I have more recently noticed in the collection at the East India House a species of *Sargus*, brought from Java by Dr. Horsfield, the thorax of which possesses lateral as well as scutellar spines. The same also occurs in the genus *Clitellaria*.

Athericera (containing the *Syrphidæ*), of which “le Suçoir se compose de quatre pièces, et non de deux comme dans tous les autres *Athericères*,” the two maxillæ being clearly developed* and very acute, and the palpi longer than the labrum, compressed, and broader towards the apex than at the base. The ABDOMEN exhibits another peculiarity, all the specimens which I have examined having the four basal joints soldered together, without any distinct articulation, on the upper side of the abdomen: this is the case even in *D. signata* and *fasciata*, in which the situation of the articulations is indicated by a black slender line. This structure is represented in Linnæus’s original figure; but Dalman, who drew the figures accompanying his memoir, has represented the articulations of the basal segments in all his species.

DIOPSIS. *Lim. et Auctt.*

Characteres Generis.

Corpus parvum, elongatum, longitudine vix dimidium uncii æquans. *Caput* parvum, suprâ subtrigonum, facie anticâ perpendiculari, subconicâ, subtùs truncatâ, muticâ, vel utrinque unispinosâ, latere supero vel vertice in medio ocellifero, et utrinque in *cornu* longissimum cylindricum plùs minùsve gracile subascendens, ad apicem oculiferum, et paullò ante apicem antenniferum divergens producto. Hæc cornua in medio vel pone medium setâ unicâ alteraque ad apicem supra oculos armantur. *Antennæ* minimæ, compressæ, 3-articulatæ articulo 1mo minimo transverso, 2do majori cyathiformi, 3tio suborbiculato suprâ ferè ad apicem, setâ (basi articulatâ,) simplici longâ. *Os* in cavitate capitis inferâ retractile. *Proboscis* magna, membranacea, geniculata. Portio basalis magna, rotundata, et pro receptione partium oris interiorum concava (an labri vera pars analogica?). *Labrum* (dimidii labii longitudine) acuminatum, crustaceum, et pro receptione *linguæ* subtùs carinatum. *Lingua* labro paullò brevior, gracilis, compressa. *Maxillæ* distinctæ, linguâ breviores, graciles, acutissimæ. *Palpi* labii ferè longitudine, ad basin arcuati (articulati?), compressi, versus apicem dilatati, pilosi. *Labium* magnum, stipite

* Since this account was written, Mr. Curtis has illustrated the genus *Borborus* in his “British Entomology,” which he describes as possessing “maxillæ very small and linear.” (*Brit. Ent.* 469.)

(mento?) brevi, cylindrico, apice vel capitulo carnosio, compresso, bilobato, corrugato, tenuitèr pubescenti. *Truncus* elongatus, subovatus, anticè attenuatus, *mesothorace* interdùm, *scutello metathorace*que semper utrinque unispinosis, hoc distincto, subquadrato. *Halteres* nudi. *Alæ* ut in *Calobatá* reticulatæ, nervo angulari basali interno nullo. *Pedes* elongati, antichi raptorii coxis longis, femoribus plùs minùsve incrassatis, et subtùs serie duplici denticulationum parvarum instructis, tibiis subarcuatis. *Femora* 4 postica gracilia, ad apicem interdùm unispinosa. *Tibiæ* posticæ inermes, rectæ. *Tarsi* 5-articulati, articulo 1mo longissimo. *Pulvilli* magni. *Abdomen* elongatum, angustum, plùs minùsve clavatum, ad basin attenuatum, suprà convexum, subtùs tamen concavum, *segmentis* 4 anticis arcètè conjunctis, haud articulatis, ad basin suprà subcanaliculatum.

The *differentiæ sexuales* in this genus have not hitherto been clearly ascertained. Dalman says, "Abdomen maris lineare, feminae pone medium incrassatum, subclavatum;" adding, "Ob formam abdominis in una eademque specie diversam, linearem nempe vel clavatam, illam maris, hanc feminae sexum indicare, suspicari liceat." Dalman, however, had observed this variation in one species only, *D. signata*. From the differences, however, existing in specimens of *D. fasciata*, *D. assimilis*, and *D. Sykesii*, it would seem that the clavation of the abdomen is not confined to the female; whilst it also appears that in some species the males are distinguished by the greater length of the ocular peduncles: that this, however, is not always the case is evident from these organs not being longer in the slender specimens of *D. signata*, *fasciata*, and *assimilis*, than they are in the more robust ones. I observed, moreover, in the robust specimens of *D. Sykesii*, as well as in *D. fasciata*, a minute exerted style at the extremity of the last (incurved) segment of the abdomen: hence, taking the characters of all the species into consideration, it appears that the females are larger and more robust than the males, their abdomens more distinctly clavate, whilst the ocular peduncles of the males are more slender and often longer than those of the opposite sex*.

* The celebrated Danish traveller and naturalist M. Lund informed me that the males alone in *Diopsis* possess the elongated processes of the head; but it is evident that he referred to the insects which he had collected in Brazil, and which Wiedemann has described under the name of *Zygothrica dispar*.

Of the *history* of this genus few words will suffice. Linnæus in 1775 established the genus, and described one species only, *D. ichneumonea*, which name Fabricius adopted; but it would appear that the latter confounded, under that name, two species distinct from each other as well as from the original species. Illiger added another species, *D. nigra*; Donovan also described another from the East Indies under the name of *D. ichneumonea*; Say added a North American species, *D. brevicornis*; and Dalman, three new African species, noticing also Linnæus's and Illiger's species, and the confusion in the specific description of Fabricius, but overlooking Donovan's error. Wiedemann followed Dalman, adding another species, *D. Dalmani*, and giving the Fabrician species as distinct under the name of *D. confusa*, making (together with Say's insect) 8 species; to which Mr. G. R. Gray has added another in Griffith's Animal Kingdom. In the following pages 18 species, together with 3 doubtful ones, are described*.

As in *Paussus*, the geographical range of *Diopsis* seems confined to the tropical climates of the Old World; the central parts of Africa (to which alone Dalman thought it restricted), the East Indies and Indian islands producing all the species, except Say's North American one, which scarcely seems to belong to the genus.

As to the *affinities* of the genus, Linnæus, from the existence of its halteres and small proboscis, was convinced that it was a Dipterous insect, although in its spinose thorax it differed very much from all the *Diptera*, approaching *Formica*, whilst in its long legs, clavate abdomen, and spotted wings it resembled the Ichneumons.

Latreille was very early aware of its affinity with the domestic fly, and he accordingly placed it in the great group *Muscidæ*, in the same division with the genera *Sepedon*, *Tetanocera*, *Oscinis*, *Calobata*, and *Achias* (*Gen. Crust. &c.*, vol. iv.). Fallen, who divided the *Muscidæ* into four subfamilies, placed *Diopsis* amongst the *Ortalides*, including *Sepedon*, *Tephritis*, *Sepsis*, *Micropeza*, &c. Dalman, however, from its short rounded antennæ, deemed it to belong to Fallen's *Micromyzidæ*, adding, "Melius forsan ad propriam familiam *Diopsis* cum *Achia* anandanda." Wiedemann, however, in his memoir upon *Achias*, ex-

* I have not been able to discover in our public libraries a copy of MM. Villars and Capelle's *Journal de la Société de Santé et d'Histoire Naturelle de Bordeaux*, in the first volume of which (p. 77.), I believe Latreille published a notice or memoir upon this genus.

cludes it from his "familia *Achiidarium*," probably on account of the form and position of its antennæ. Latreille also, in the second edition of the *Règne Animal*, removes it from *Achias*, and places it amongst his *Carpomyzæ*, immediately after *Calobata*, and before *Cephalia*, *Sepsis*, *Ortalis*, &c. With these genera, indeed, it appears the most nearly allied, not only in the elongate form of the body, but also in the maculation of the wings. The structure of the mouth, however, in *Diopsis*, previously described, seems to indicate the want of a decided affinity with these groups.

Hitherto no facts respecting the *habits* of this genus have been published. Dalman, evidently speaking from information supplied to him by Afzelius, states that the latter found his specimens merely by accident in the windows of houses. He has, however, made two observations, which are sufficient of themselves to prove him to have been a first-rate entomologist, rendering our regret at his loss the more painful: "Insectorum oculos valde prominentes semper fere vitam super sabula vel ad ripas indicare, ut colligere licet ex *Cicindela*, *Elaphro*, *Omophrone*, *Steno*, inter *Coleoptera*; *Salda*, *Alydo* inter *Hemiptera*. Ceterum oculorum prominentia præsertim insectis rapacibus videtur esse propria, et adaptata ad istum vivendi modum, ut in jam supra recensitis et in *Libellulinis*, *Hemerobio* et aliis;" adding, however, "Oris tamen ratio in *Diopsi* a præda capienda aliena videtur." The statement, however, which Colonel Sykes has been kind enough to furnish me with respecting the habits of *D. Sykesii*, subsequently detailed, prove that in regard to this genus Dalman was correct in his supposition that insects with prominent eyes affected moist situations, whilst the raptorial fore legs and the more developed structure of the mouth show that his latter observation cannot be far from correct.

As to the characters which constitute the *specific distinctions* observable in the following insects, it is to be noticed, that from an examination of not less than thirty-five specimens of *D. Sykesii*, variation in colour appears to be of the first importance in this group. It will be seen, however, from Dalman's observation upon *D. signata*, that even colour is liable to variation, although evidently only to a slight extent. Scarcely the slightest variation in this respect existed in any of the specimens of *D. Sykesii*. The length of the horns, which Dalman gives as one of the leading characters of his *D. macrophthalma*, is, as stated above, a sexual difference, and therefore ought not to be employed.

The size of the anterior femora, however, is a specific and not a sexual character, those parts being of equal size in both kinds of individuals.

It is worthy of remark, that in the species which have the wings unspotted, neither the sides of the mouth nor the extremity of the four posterior femora are, except in one instance, armed with spines.

The species may be arranged in four groups: 1st, those with clear wings, and the face and posterior femora unarmed; 2nd, those with an apical spot on the wings; 3rd, those having a subapical abbreviated fascia; and 4th, those with one or more entire fasciæ across the wings. In order, however, to place the typical species at the head of the genus, I shall alter the position of the groups as follows:

Sectio I. *Alis fasciâ abbreviatâ paullò ante apicem.*

Species 1. DIOPSIS ICHNEUMONEA. Linn.

TAB. IX. Fig. 1.

D. capite rufescenti, cornubus oculiferis ferrugineis, thorace nigro, spinis flavis, alis ante apicem maculâ nigrâ, abdomine segmentis duobus (tribus?) ultimis nigris.

Long. corp. e figuris Linnæanis, lin. 4 vel 5.

Habitat in Africâ æquinoctiali? In Mus. —?

Linné, *Diss. de Bigis Insect.* p. 5. tab. f. 1—5. *Amœn. Acad.* vol. viii. p. 303.

Fuessly, *Archiv.* 1. t. (6.) edit. Gale, p. 19. Gmelin, *Syst. Nat.* tom. i. pars v. p. 2829. Latreille, *Hist. Nat. Gen.* vol. xiv. p. 376. tab. 14. f. 6—7. *Dict. d'Hist. Nat.* xxiv. 435. tab. 112. f. 6, 7. (e citat. Fabr. et Dalm.). *Gen. Crust. et Ins.* vol. iv. p. 353. *Dict. d'Hist. Nat.* vol. ix. p. 477. pl. D. f. 5, 6. Cuvier, *Règne Anim.* ed. 1. tom. iii. p. 650. Olivier, *Enc. Méth.* 6. 1. p. 276. Lamarck, *Anim. sans Vertebr.* tom. iii. p. 370. Dalman, *Act. Holm.* 1817. 211. *Anal. Ent.* p. 3. No. 1. Oken, *Isis*, 1820, p. 502. Wiedemann, *Ausser. Zweifl. Ins.* vol. ii. p. 557. Shaw, *Gen. Zool. Ins.* vol. ii. pl. 104.

“*Corpus* magnitudine *Formicæ rubræ*, statura *Ichneumonis*. *Caput* rufescens, dente utrinque ad os: extenditur hoc in duo cornua, patentia, longitudine thoracis, solida, neque articulata, uti antennæ, ferruginea, terminata oculo globoso, flexo, nigro. Adjecto juxta oculum puncto cum seta, antennæ

rudimento. *Thorax* niger, postice dentibus a tergo duobus subulatis, flavis, et utrinque solitariis ad latera. *Alæ* binæ, hyalinæ, versus apicem antierius puncto nigro. *Abdomen* (Ichneumonis) clavatum, subpedicellatum, articulis duobus ultimis nigris. *Pedes* flavi, femoribus anticis clavatis."

The above is a transcript of the Linnæan characters; but from a careful inspection of the original figures, several additional peculiarities are noticeable which do not exist in the description. In the latter, the two terminal abdominal segments alone are stated to be black, but in the figure the last *three* joints are represented as more darkly coloured than the anterior part of the abdomen. In the description no notice is taken of the situation of the ocelli, nor of the terminal spines of the femora, both of which characters appear in the figure. The existence of spines upon the ocular peduncles neither appears in the description nor figures. As to the colour of the base of the abdomen no statement is made; but as the *terminal* segments are mentioned as being black, it is evident that the preceding joints must have been of a different colour, which, from analogy, may fairly be considered to be red. As to the situation of the spot of the wing, it is quite clear, not only from Linnæus's description, "*versus apicem antierius puncto nigro,*" but also from the figures, that the spot is not terminal, but placed at a short distance from the extremity of the wing. From the figures (which, however, in this respect are doubtless inaccurate,) it would seem that the ocular peduncles are more erect and less divergent than in the other species. Dalman has drawn up his description of this species from a comparison between the original description and figures, deeming the latter to be more deserving of attention than the former, to the correctness of which, however, I cannot agree; hence he is induced to consider that Linnæus's insect was a female, probably because the abdomen is clavate, and the ocular peduncles are only "*longitudine thoracis;*" these characters, however, as we have already seen, are not conclusive as to the sex. He also says, "*Antennæ pallidæ seta nigra,*" although Linnæus is silent as to the colour of these parts. He adds, "*collari rufescenti,*" whilst Linnæus says, "*thorax niger:*" it is true, that in Linnæus's figure the collar is represented of as light a colour as the head, but I think that Linnæus would not have omitted to mention the difference in colour of the front of the thorax, if

such had been the case, because he did not overlook the difference in colour of the thoracic spines. Further, the engraving ought not to be too much relied upon, since the base of the abdomen is nearly as darkly coloured as the terminal segments, and, as Dalman observes, the 4th and 5th longitudinal nerves are represented as running in a straight direction to the margin of the wing. In the last place, Dalman describes the halteres as "pallidi," although Linnæus is silent as to their colour.

I have been thus minute in noticing the characters of this species, not only because it is the original and typical insect in the genus, but also because upon the elucidation of its distinctions depends the specific rank of one, if not of two, of the other species which I have given. *D. Ichneumonea* does not exist in the Linnæan cabinet; the only species contained therein being that which I have named *D. obscura*, and which totally disagrees with the Linnæan description.

The doubts which exist respecting the characters of this species are moreover increased by those concerning its real *habitat*. Linnæus merely says, "Inclitissimo Lond. Anglorum Medico Dom. Doctori Fothergill, qui naturæ pervestigationem in summis habet deliciis, et maximam insectorum copiam, præcipue ex America septemtrionali et Guinea allatam, possidet, ad Nob. Dom. Præsidem excellentissimas suas collectiones, hand ita pridem, mittere placuit." The introduction of the word "præcipue" at once shows that the insects in Dr. Fothergill's collection were not exclusively from North America and Guinea, as recorded by Dalman and Wiedemann. Fuessly (according to Donovan) upon this ambiguous authority describes the insect as a native of Cayenne; Gmelin notes it as inhabiting *both* Guinea and America; Fabricius (probably, however, confusing three different species,) mentions Angola, Sumatra, and Congo; Latreille, on the authority of M. Perrin, a zealous naturalist of Bourdeaux, states it to be from the coast of Angola*; Donovan (evidently, however, speaking of a distinct species, notwithstanding his positive

* Latreille, in the *Dict. d'Hist. Nat.*, published an original description of the specimen brought from Angola by Perrin. He describes it as 5 lines long, with the head "fauve," thorax black, abdomen "fauve," with the two last segments black, wings "avec un point noirâtre vers l'extrémité;" thus confirming the Linnæan description in every particular, as well as establishing its locality as an African insect.

assertion that his insect was identical with the *D. Ichneumonea*,) has Bengal; whilst Dalman, ignorant of the true existence of any East Indian species, says, "Veri tamen videtur simile *D. Ichneumoneam* habere patriam Guineam, cum omnes hucusque rite cognitæ species hujus generis sint cives istius regionis." By recurring, however, to the Linnæan species of *Paussus*, the doubts may in some degree be diminished. Linnæus received both insects from the same source; Afzelius, after much inquiry, discovered that the *Paussus* was taken at the Bañanas, or the adjacent part of Sierra Leone and tropical Africa. Now the insect which I have described under the name of *D. collaris*, and which is the only species with the transverse subapical fascia on the wings whose habitat is clearly known, is from Senegal. Hence, therefore, from all the preceding circumstances, together with the fact that no true *Diopsis* has been found in the New World, I think we may safely consider that Linnæus's insect was from Guinea, or some other part of the coast of tropical Africa.

Species 2. *DIOPSIS COLLARIS*, *mihî*.

TAB. IX. Fig. 2.

D. rufo-testacea, thorace (nisi collari rufo) nigro, alis maculâ transversâ, ante apicem positâ femoribus 4 posticis inermibus.

Long. corp. lin. $3\frac{1}{4}$. Expans. alar. lin. 6.

Habitat in Senegalliâ Africæ. In Mus. nostr.

Statura *D. apicalis* at brevior. Individuum nostrum e formâ abdominis fœmininum esse videtur. *Caput* rufo-testaceum, glabrum, nitidum, versus os attenuatum, ibique emarginatum et utrinque spinâ minutâ acutâ paullò divergenti armatum. *Haustellum* fuscum. *Facies* convexa, sulculo longitudinali tenni lineâque arcuatâ fuscâ in pedunculos oculiferos terminata, alterâque arcuatâ supra os. *Regio ocellorum* nigra. *Pedunculi* cum oculis capite et thorace conjunctim paullò breviores, obscurè ferruginei, apice nigri. *Spina intermedia* brevissima, pone medium sita. *Spina terminalis* ferè obsoleta. *Antennæ* fulvæ: *setâ* apicali nigrâ. *Oculi* nigri, ad basin ferruginei. *Collare* rufescens, ad latera posticè dilatata. *Thorax* niger, nitidus, suprâ vix sericeus, subtùs magis sericeo-cinascens. *Scutellum* thoraci concolor. *Spinæ scutellares* flavæ, graciles (apicibus in specimine

nostro unico deteritis) et (e parte basali relictâ gracili) breves videntur. *Spinæ duæ metathoracicæ* breves, obscurè flavæ. *Halteres* albidî. *Abdomine* thorace cum capite paullò longius, clavatum, thoracis latitudine in parte latiori, ochraceo-testaceum, glabrum, nitidum, basi tantùm breviter obscuriore subnigro; subtùs concavum, pallidius, genitalibus fuscis. *Pedes* omnes abdomini concolores tibiis anticis tarsorumque anticorum apicibus obscurioribus. *Femora antica* clavata, raptoria; *posteriora* 4 linearia, apicibus absque spinis. *Alæ* hyalinæ, pallidissimè fuscescentes, fasciâ fuscâ abbreviatâ (scil. ultra nervum 3um et 4um haud internè extensâ) ferè ad apicem alarum sitâ, margine externo ferè recto, antico verò irregulari, (scil. inter nervos 3um et 4um dilatâtâ et versus basin alæ paullò extensâ.)

Obs. A *D. Ichneumoneâ* abdominis apice lætè ochraceo-testaceo, et à *D. apicali* fasciâ alarum ante apicem sitâ, differt.

Species? 3. DIOPSIS PALLIDA, *mihî*.

Tab. IX. Fig. 3.

In Musæo Britannico insectum præcedenti valdè affine conservatur, sed an speciem esse distinctam, vel varietatem fœminæ (ut pedunculi breviores indicant,) aut marem præcedentis (ut ex abdomine graciliori haberes), non possum determinare. Hujus insecti notas sequentes essentielles observavi.

Color ochraceo-testaceus in omni parte insecti multò pallidior est, et quasi testaceo-luridus, præsertim in pedibus et fasciâ versus apicem alarum; nervi etiam pallidissimi sunt. *Abdomen* gracile thorace angustius et illo e tertiâ parte longius, in medio paullò dilatatum, at clavatum non dici potest. *Oculorum pedunculi* breviores sunt quàm in præcedente. *Thorax* (nisi *collare*) niger, opacus, haud nitidus, cinerascenti-sericeus. *Abdomen* totum concoloratum est. *Femora postica* (saltem in pedibus duobus posticis,) spinâ apicali brevissimâ armata sunt. *Spinæ scutellares* scutello duplò longiores, fulvescentes.

Long. corp. lin. $3\frac{1}{2}$. Expans. alar. lin. $5\frac{1}{2}$. De patriâ hujus insecti intelligentiam nullam obtinere potui. Si tamen diversitas specifica hujus insecti tempore futuro confirmetur, utinam nomine supradicto designare.

Species 4. DIOPSIS NIGRA. Illiger.

D. nigra, alis fasciâ ante apicem lineari fuscâ.

Long. corp. lin. 3.

Habitat in Sierrâ Leonâ. In Mus. — ?

Illiger, *Mag. fur Insektenk.* vol. vi. p. 365. Dalman, *Anal. Ent.* p. 6. No. 5.

Wiedemann, *Auss. Zweifl. Insekt.* vol. ii. p. 562. No. 6.

Corpus totum nigrum, pedibus posticis, oculorum pedunculis spinisque duabus, thoracis brunnescentibus. *Alæ* hyalinæ, fasciâ parvâ lineari fuscâ ante apicem. *Femora antica* valdè incrassata. *Thorax* subtùs vestimento sericeo obtectus. A *D. Ichneumoned*, Linn., discrepat præsertim magnitudine minori coloreque nigro.

No further information has been published respecting this species than is given in Illiger's original German description, which I have translated into Latin as above.

Sectio II. *Alis maculâ terminali.*

Species 5. DIOPSIS APICALIS. Dalman.

TAB. IX. Fig. 4.

D. rubra, abdomine concolori immaculato, thorace nigro nitido, alis in summo apice puncto fusco.

Long. corp. lin. $3\frac{1}{2}$, *Wied.* ; $3\frac{3}{4}$, sec. fig. *Dalm.*

Habitat in Sierrâ Leonâ. In Mus. Viennensi, Schonherr et Wiedemann.

Dalman, *Act. Reg. Holm.* 1817, tab. 7. *Anal. Ent.* p. 5. No. 2. tab. 1. f. 1. 4.

Oken, *Isis* 1820, p. 504. tab. 5. f. 1. Wiedemann, *Auss. Zweifl. Insekt.* vol. ii. p. 558. No. 2. Latreille, *Règne Anim.* ed. 2. vol. 5. p. 532.

“Magnitudo *Sepedonis sphegei*.” Individuum Dalmannianum e figurâ abdominis, ut videtur, fœmininum. “*Caput* rubrum, glabrum, nitidum, versus os attenuatum, ibique emarginatum, et utrinque spina acuta subrecta armatum. *Haustellum* pallide testaceum. *Frons* convexa, sulculo longitudinali parum profundo, lineaque arcuata nigra in cornua oculifera desinente. *Cornua* cum oculis capite cum thorace vix longiora, antice basi subcarinata, ferruginea, medio obscuriora, apice nigra, ibique spina acuta nigra armata. *Oculi* magni globosi, in mortuis pallidi. *Antennæ* rufes-

centi-pallidæ, seta nigra. *Thorax* supra niger nitidulus, subtus investimento subfugaci cinereo opaco obductus, collari angusto concolori. *Scutellum* thoraci concolor, in apice spinis duabus flavis, validis, scutello plus duplo longioribus, divergentibus, armatum. *Spinæ* duæ minores flavæ, metathoraci, inter alas et halteres, insertæ. *Abdomen* thorace cum capite paullo longius, clavatum, (subtus tamen concavum,) rufo-ferrugineum, glabrum, nitidum, immaculatum, subtus pallidius, genitalibus fuscis. *Pedes* omnes abdomini concolores (doch ein wenig mehr in's gelbe, *Wied.*), tibiæ tarsorumque apicibus saturatoribus; femora antica reliquis multo crassiora (non vero clavata); posteriora linearia, summo apice unispinosa. *Alæ* abdomine longiores, hyalinæ, disco nonnihil infuscatæ, et ipso apice macula orbiculari fusca notatæ. *Halteres* albi." *Alarum nervi* fusi. *Tarsi* saltem pedum posticorum albidii, nitidi.

Dalman, whose description I have copied above, observes, "A *Diopsi Ichneumonea*, Linn., differt hæc species præsertim abdomine unicolore et macula fusca alarum in summo apice, non ante illum sita;" to which Wiedemann adds, "Wenn die Zeichnung in der Linneischen Dissertation als vollig genau anzunehmen ist, so verhält's sich allerdings so:" but of the correctness of Dalman's observation it appears to me there can be no doubt. The latter appears to have been acquainted with a single specimen in the collection of Schönherr, which, from the figure of the abdomen, appears to be a female; but Wiedemann, who also gave an original description containing several additional characters, which I have added above, possessed the species, and was also acquainted with specimens in the Vienna collection, all of which he gives as "♀," describing their ocular peduncles as "so lang find als kopf und ruckenschild zusammengenommen", and the abdomen as "keulformig."

Species? 6. *DIOPSIS TENUIPES*, *mih.*

Tab. IX. Fig. 5.

Insectum alterum possideo, præcedenti coloribus valdè affine, quod (e longitudine pedunculorum) marem ejus haberi potest. Ab illo præcipuè differt longitudine pedunculorum oculiferorum, qui cum capite et thorace e tertiâ parte sunt longiores, et in medio vix obscuriores; facies subtus attenuata, dente utrinque longo divergenti. *Thorax* totus niger, nitidus. *Spinæ scu-*

tellares valdè elongatæ, flavæ, apice nigræ. *Femora* antica quàm postica tantùm paullò crassiora, tibiæ et tarsi pedum anticorum atque tibiæ duarum posticarum tarsorumque apices saturatiora. *Abdomen* rufum, elongato-clavatum, scil. segmentum 1um (longissimum e segmentis 4 basalibus constans) sensim ad apicem dilatatum, articulis duobus terminalibus brevissimis, sensim attenuatis. *Alarum discus* subinfuscatus, apiceque maculâ terminali sat parvâ.

Long. corp. lin. 3. Expans. alar. lin. $5\frac{1}{2}$.

Habitat in Senegalliâ. *D. Bucquet.* In Mus. nostr.

Obs. Si cum indagatione futurâ hoc insectum ut speciem à præcedente distinctam determinatur, illud nomine supradicto designare volui.

Species 7. *DIOPSIS INDICA, mihi.*

TAB. IX. Fig. 6.

D. ferruginea, oculis thorace toto abdomine posticè alarum maculâ apicali spinisque scutellaribus nigris.

Long. corp. e fig. *Donov.* lin. 4. Expans. alar. lin. 6.

Habitat in Bengaliâ. *D. Fichtel.* In Mus. — ?

Diopsis Ichneumonea. *Donov. Ins. of India, tab. ult. Rees' Encycl. vol. xi. pl. ii. fig. 13.*

Magnitudo et statura *D. apicalis.* E pedunculis oculiferis abdomineque clavato, figuræ *Donovani* sexum fœmineum indicant.

Caput testaceo-ferrugineum, facie os versus acuminatâ ibique in dentibus duobus parvis terminatâ, lineâque arcuatâ nigrâ ante verticem in partem anticam pedunculorum ductâ. *Pedunculi* cum oculis capitem et thoracem longitudine adæquant. *Thorax* totus niger. *Spinæ scutellares* longitudine mediocres, nigræ. *Abdomen* clavatum, articulo 1mo (longissimo) testaceo, articulis reliquis (duobus) nigris. *Pedes* testacei, femoribus anticis subclavatis. *Alæ* hyalinæ, maculâ subrotundâ terminali, fuscâ, basin alarum versus obscuriori.

Var. Insectum Javanicum in musæo *Dom. Hope* à cel. *De Haanio* communicatum (sub nomine *D. apicalis*, *Wied.*) staturâ et magnitudine *D. indicæ* benè convenit. *Thorax* hujus nitidissimus est, scutellum et spinæ

scutellares colore piceo parùm suffusa. Abdomen nitidissimum, saturatiùs ferrugineum apice nigro, alæque versus nervos transversos fusco nonnihil decoloratæ, apice pedunculorum oculiferorum, tibiis tarsisque anticis apiceque tibiaram posticarum obscurioribus.

Donovan, from whose figures and meagre description I have drawn the preceding characters, states that his specimens of this insect were brought from Bengal, where it was discovered by M. Fichtel, adding, "And they are most assuredly the *D. Ichneumonea* of Linnæus." There are, however, three objections to this assertion: 1st, *D. Ichneumonea*, according to the best authorities quoted above, is evidently an inhabitant of Western Africa; 2nd, the spines of the thorax are black in Donovan's figures (he says nothing of their colour), whilst they are yellow in *D. Ichneumonea*; and, 3rd, the spot on the wings in Donovan's insect is clearly terminal, whilst in *D. Ichneumonea* it is equally evident that it is a transverse fascia before the apex. Dalman and Wiedemann have followed Latreille in incorrectly adapting the reference of Donovan's figures to the *D. Ichneumonea*, without noticing the peculiarities mentioned above.

Species 8. DIOPSIS ASSIMILIS, *mihi*.

Tab. IX. Fig. 7, 8.

D. rufescenti-ochracea, abdominis apice saturatè fusco, thorace nigro, collaris piceo, alis maculâ apicali nigrâ, femoribus posticis subinermibus spinisque scutellaribus ochraceis.

Long. corp. lin. $3\frac{1}{2}$. Expans. alar. lin. 6.

Habitat —? Specimina duo in Musæo Britannico hospitantur, quorum unum abdomen habet longius et gracilius (♂?), alterum robustius et paullò majus (♀?). Hoc etiam saturatiùs est coloratum.

Caput cum pedunculis rufescenti-fulvum, his apice obscuris et in speciminibus ambobus, thorace cum capite paullò brevioribus. *Oculi* nigri. *Antennæ* pallidæ, setâ longâ nigrâ. *Spinæ pedunculares* ordinariæ minutissimæ duæ, pone medium et propiùs antennas positæ quàm in præcedentibus; facie os versus acuminatâ, lateribus ferè rectis, dente brevissimo recto utrinque subtùs terminatâ. *Thorax* niger, obscurus, haud nitidus, cineras-

centi-sericeus. *Prothorax* et *scutellum* obscure picea, spinis flavidis, scutellaribus scutello duplò longioribus, in specimine robustiori apice fuscis, in altero omninò flavidis. *Femora antica* speciminum amborum crassiora, subclavata; 4 *postica* subinermia. *Tibiæ* 4 *posticæ* (in specimine graciliori) in medio subcompressæ. *Tibiæ anticæ* et apex tiliarum duarum posticarum fusca. *Tarsi antici* suprâ fusei, subtùs pilâ aureâ vestiti. *Alæ* basin versus latiores quàm in specimine nostro *D. tenuipedis*, hyalinæ; in medio, scil. versus nervum transversum intermedium, nonnihil infuscatæ, maculâ rotundatâ apicali nigrâ, apice ipso paullò pallidiori. *Abdomen*, in speciminibus ambobus, subclavatum (in uno gracilior), segmento 1mo longissimo, apicem versus attenuato, reliquis duobus brevissimis, sensim attenuatis, his fuscis, illo rufescenti-fulvo, apicem versus saturatiùs fusco.

Obs. Specimina duo hujus speciei in mus. Soc. Linn. Lond. nuperiùs observavi, in quibus femora 4 *postica* spinâ minutissimâ laterali, at vix conspicuâ apice armantur; tibiæque 4 *posticæ* in medio paullò obscuriores sunt, apiceque fuscæ, inde subannulatæ ante apicem videbuntur.

Species? 9. *DIOPSIS ABDOMINALIS, mihi.*

Specimen in musæo Soc. Linn. Lond. hospitatur, *D. assimili* habitu coloreque alarum optimè congruens, sed magnitudinem majorem, scil. long. $4\frac{1}{2}$ lineas habet, et abdomen ejus nihilominùs totum castaneo-nigrum est et nitidum; femora 4 *postica* spinâ minutissimâ apicali armantur; tibiæ obscuræ, 4 *posticæ* annulo subapicali pallidiori; spinæ scutellares et metathoracicæ piceo-nigræ; collare et scutellum nigra subnitida. Caput, pedunculi oculiferi femoraque ut in *D. assimili* colorata, at paullò obscuriora.

Obs. Hoc insectum cum specie prædictâ maximam habet affinitatem, tamen magnitudo ejus et color abdominis spinarumque scutellarium speciem distinctam, ut videtur, satis indicant.

I may add that Dr. Leach, who partially arranged the *Diptera* belonging to the Linnean Society, placed this as distinct from the preceding species.

Species 10. *DIOPSIS FUMIPENNIS*, *mihî*.

TAB. IX. Fig. 9.

D. capite thorace toto abdomineque posticè nigris, hoc anticè saturatè ferrugineo, femoribus anticis gracilioribus, alis infumatis maculâ magnâ terminali nigrâ.

Long. corp. lin. 3. Expans. alar. lin. $5\frac{1}{2}$.

Habitat in Senegalliâ? In Mus. nostr.

Habitus et statura insecti superiùs descripti sub nomine *D. tenuipedis*, tamen paullò minor coloribusque obscuris diversa. *Caput* nigrum, facie os versus acuminatâ, et subtùs utrinque in spinam piceam terminatâ. *Pedunculî oculiferi* cum oculis quàm thorace cum capite ferè e tertiâ parte longiores, graciles, fulvo-picei, apice nigri, in medio spinâ perbrevis armati, alterâque apicali. *Oculi* ferruginei. *Antennæ* pallidæ. *Thorax* totus niger, nitidus, vix sericeus, et inter basin alarum et halteres spinâ brevi pallidâ utrinque armatus. *Spinæ scutellares* in specimine nostro unico deteruntur. *Abdomen* elongato-subclavatum, saturatè ferrugineum, apice obscurè fusco-nigrum (in coloribus abdomen *Cheilosie Brassicarum* simulans). *Pedes* lutei, tibiis tarsisque anticis apiceque tibiarum posticarum obscurè fuscis; femora antica tantùm paullò crassiora quàm postica et vix raptoria videntur, etsi subtùs serie duplici tuberculorum spiniferorum parvorum nigrorum instructa; femora 4 postica apice spinâ brevi armata. *Alæ* disco latè infuscato apiceque maculâ magnâ terminali nigrâ.

I at first hesitated whether this insect, which I purchased in Paris, was more than a variety of the *D. apicalis*; but the investigation of the characters of other species has induced me to consider its black head, dark terminal segments of the abdomen, and clouded wings, together with some other circumstances connected with its structure, noticed above, as sufficient to warrant its being regarded as a distinct species.

Species 11. *DIOPSIS PUNCTIGER*, *mihî*.

Notis plurimis *D. fumipenni* congruit, et varietatem ejus forsitan esse. Differt tamen magnitudine majori, alarum disco minùs infumato, thorace

minùs nitido, disco usque ad prothoracem evidentèr at subtilitèr punctato, præsertim scutellum versus, hoc valdè obscuro sericie subfuscescenti induto, spinis scutellaribus ferè longitudine thoracis nigris nitidis, pedibus paullò obscurioribus, femoribus posticis extùs, basin versus fasciâ obscurâ, tibiisque posticis totis fuscis.

Long. corp. lin. $3\frac{1}{2}$. Expans. alar. lin. 6.

Habitat in Africâ Occidentali. In Mus. Dom. Hope.

Obs. Statura pedum anteriorum ferè ut in *D. fumipenne*. Pedunculi oculiferi pro magnitudine insecti nonnihil longiores, inde sexus masculinus indicatur.

Sectio III. *Alæ immaculatæ (facies subtùs et apex femorum 4 posticorum plerumque inermia).*

Species 12. DIOPSIS SIGNATA. *Dalm.*

TAB. IX. Fig. 10, 11.

D. pallidè testacea, thorace fusco cinereo opaco, abdomine ferrugineo, maculis lateralibus (vel potiùs fasciis) lacteis, tibiis posticis infuscatis, annulo pallido, collari rufo-testaceo, scutello testaceo.

Long. corp. variat.

Habitat in Sierrâ Leonâ. *Afzelius*. In *Muss. Gyllenhal et Schönherr*.

Dalman, Act. Holm. 1817, t. 7. *Anal. Ent.* p. 5. No. 4. t. 1. *Oken, Isis* 1820, vol. 505. t. 5. f. 4. *Wiedemann, Auss. Zweifl. Ins.* vol. ii. p. 561.

“ Magnitudine variat, majores *D. macrophthalmæ* fere æqualis, aliæ duplo vel triplo minores. Habitus et summa affinitas *D. macrophthalmæ*, sed et coloribus differt, et cornubus oculiferis multo brevioribus, et media fronte subcarinata. *Caput* breve, testaceum, subdiaphanum, margine orali dilatato; frons convexa in medio carinula sat evidente, quæ vero summo dorso canaliculata videtur, posterius in lineam nigram arcuatam cornuum abiens. *Vertex* subinæqualis. *Cornua oculifera* thorace cum capite non longiora, crassiuscula, testacea, apice nigricantia, setis ordinariis nigris. *Oculi* obscuri. *Antennæ* testacæ, seta nigra. *Thorax* supra fuscus, subtus cinerascens, certo situ colore margaritaceo fugaci micans, collari rufo-testaceo. *Scutellum* testaceum, spinis adscendentibus scutello duplo longioribus, concoloribus summo apice setula nigra terminatis. *Spinulæ*

metathoracis binæ ordinariæ breves, testaceæ. *Abdomen* thorace fere duplo longius, in nonnullis, forte maribus, gracile, lineare; in aliis, forte fœmineis, subclavatum; in utroque sexu testaceum, segmentis singulis, primo excepto, macula laterali lacteo-nitidula, sæpius margine confluenta, unde oriuntur fasciæ emarginatæ, quarum tamen prima evidentior, vix emarginata. *Pedes* testacei, femoribus anticis valde incrassatis, subtus subtiliter crenulatis, reliquis simplicibus muticis; tibiæ anticæ obscuriores, posticæ infuscatæ, medio subcrassiores, annulo pallido. *Alæ* hyalinæ immaculatæ. *Halteres* albi.

“*Obs.* In exemplaribus nonnullis caput et pedes saturatius testacei, nitidi, in aliis pallidiores, opaci; in uno specimine abdomen subfuscum, maculis lacteis ut in reliquis.”—*Dalm. l. c. p. 6.*

Species 13. DIOPSIS FASCIATA. *G. R. Gray.*

Tab. IX. Fig. 12, 13.

D. capite pedibusque luteo-fulvis, tibiis posticis albo-annulatis, abdomine ferrugineo fasciis albis, collari scutelloque cum thorace concoloribus nigro-cinereis.

Long. corp. ♂ ? lin. $2\frac{1}{3}$, ♀ ? ferè lin. 3. Expans. alar. ♂ ? lin. $3\frac{2}{3}$, ♀ ? lin. 5.

Habitat —? In Mus. Brit.

G. R. Gray in Griffith's Transl. Règne Anim. No. 34. p. 773. pl. 125. f. 3.

Habitus et summa affinitas cum *D. signatâ*, sed colore prothoracis scutelli spinarumque metathoracicarum abundè differt. E speciminibus duobus in Musæo Britannico conservatis, unum, quod minus est, coloribus pallidioribus, et abdomen multò gracilius habet. Hoc masculum opinor quamvis pedunculi ejus oculiferi (pro magnitudine insecti) non aut vix longiores sunt quàm in specimine majori, quod ex abdomine robustiori, apiceque stylifero fœmininum existimo.

Caput breve, pallidè luteum aut testaceum, facie os versus acuminatâ, inermi, margine orali subrotundatâ, suprâ lineâ arcuatâ in pedunculos terminatâ. *Pedunculi oculiferi* capite concolores, apice obscuri et cum oculis, caput et thoracem longitudine adæquant, crassiusculi, setis ordinariis elongatis nigris. *Oculi* nigri, posticè ferruginei. *Antennæ* pallidæ, setâ nigrâ.

Thorax in ♂? nigro-fuscus, haud nitidus, in ♀? obscurior, sericeus, subtùs cinerascenti-sericeus; *collari* et *scutello* concoloribus. *Spinæ scutellares* scutello duplò longiores, testaceæ, apice nigræ; *metathoracicæ* breves, nigræ. *Abdomen* thorace ferè duplò longius, in ♂? sublineare, in ♀? robustum, subclavatum, et apicem versus attenuatum, in utroque sexu ferrugineum; segmento 1mo (longissimo) 4-fasciato, fasciis albis, 2do 3tioque ad latera posticè dilatatis; ante fasciam 1am albam fascia nigra etiam observatur, et basis seipsa abdominis fusca; segmenta reliqua apicalia margine postico graciliori albo ornantur. *Pedes* lutei aut subtestacei; femoribus anticis valdè incrassatis, in ♀ in medio, posticè fusco suffusis, apice in pari postico fusco; tibiæ et tarsi antici tibiæque posticæ fuscæ, hæ basi et in medio annulo pallidiori. *Alæ* hyalinæ, apicem versus paullò obscuriores. *Halteres* pallidi.

Species 14. *DIOPSIS CONCOLOR*, *mih.*

D. thorace abdomineque concoloribus sericie pallidè luteo-fuscescenti indutis, hoc opaco cinereo tenuè trifasciato, pedibus ochraceis, tibiis posticis in medio pallido-annulatis.

Long. corp. lin. $3\frac{1}{2}$. Expans. alar. lin. 6.

Habitat in Africâ Occidentali. In Mus. Dom. Hope.

Descr. Habitus *D. signatæ* ♂ Dalm. Ex hoc et speciebus reliquis differt thorace et abdomine concoloribus sericieque fuscescenti tectis. *Caput* in specimine unico mutilatum. *Collare* nitidum, piceum. *Thorax* et *scutellum* nigra, suprâ sericie luteo-fuscescenti, subtùs cinereo indutis. *Spinæ scutellares* elongatæ, piceo-nigræ: *metathoracicæ* nigræ. *Abdomen* thorace duplò longius, ferè lineare, quasi masculum, sericie opacâ pallidè luteo-fuscescenti indutum, segmento 1mo (longissimo) ante medium maculâ parvâ transversâ cinereâ, pone medium lineâ impressâ (articulationem simulanti) ejusdem coloris, apiceque segmenti tenuissimè cinereo cincto. *Genitalia* (e stylis duobus brevibus parallelis exsertis composita,) alba. *Alæ* immaculatæ, colore fuscescenti nonnihil (præsertim apicem versus) tinctæ. *Pedes* testacei, femoribus anticis subdilatis, spinulisque subtùs armatis tibiis anticis ad apicem obscurioribus, tibiisque posticis in medio pallidiùs annulatis.

Species 15. DIOPSIS MACROPHALMA. *Dalm.*

TAB. IX. Fig. 14.

D. testacea, thorace atro opaco, abdomine sordide-testaceo, cornubus oculiferis dimidio corpore longioribus.

Long. corp. (e fig. *Dalm.*) lin. $3\frac{1}{2}$.

Habitat in Sierrâ Leonâ. *Afzelius*. In Mus. Dom. Schönherr.

Dalman, *Act. Holm.* 1817. *Anal. Ent.* p. 5. No. 3. t. 1. *Oken*, *Isis* 1820, vol. 504. t. 5. f. 2. *Wiedemann*, *Auss. Zweif. Ins.* vol. ii. p. 557. *Westwood* in *Mag. Nat. Hist.* No. 26.

“Magnitudo *D. apicalis*, sed angustior, præter colorem a reliquis valde distincta cornubus oculiferis multo longioribus, magisque divergentibus. *Caput* testaceum, subpellucidum, fronte brevi convexa, margine orali dilatato, rotundato, omnino mutico. *Vertex* inter cornua subcarinatus, utrinque obsolete et leviter subsulcatus, antice linea transversa nigra, parum arcuata determinatus. *Cornua oculifera* dimidio corpore distincte longiora, testacea, apice nigricantia, latere anteriore subcarinata, setis medii apicisque nigris. *Oculi* subglobosi obscuri. *Antennæ* pallidæ. *Thorax* niger opacus, collari rufo-testaceo, nitido. *Scutellum* testaceum, spinis duabus concoloribus adscendentibus; in illæsis summo apice setula nigra terminatis. *Spinæ metathoracis* parvæ flavæ. *Abdomen* thorace duplo longius, (in nostro, forte masculo, lineare,) sordide-testaceum, opacum. *Pedes* omnes testacei; femoribus anticis valde incrassatis, subtiliter crenulatis, posterioribus simplicibus, apice muticis; tibiæ posticæ in medio paullo crassiores, infuscatæ, rudimento annuli pallidi. *Alæ* longitudine abdominalis, hyalinæ immaculatæ, apice vix obscuriore. *Halteres albi*.”—*Dalm. l. c. p. 5.*

Species 16. DIOPSIS THORACICA, *mihî*.

TAB. IX. Fig. 15.

D. testacea, thorace atro nitido, scutello testaceo, cornubus oculiferis sordidis valdè elongatis, femoribus posticis apice spinigeris, facie utrinque spinosâ, alis immaculatis.

Long. corp. lin. $3\frac{2}{3}$. Expans. alar. lin. $7\frac{1}{2}$.

Long. sing. ocul. pedunc. lin. 3.

Habitat in Africâ Occidentali. In Musæo Dom. Curtis, olim in Musæo Dom. Lec.

Descr. Nova species *D. macropthalmæ* affinis, sed facie spinosâ cæterisque differt. *Caput* testaceum, fronte lineâque arcuatâ subelevatâ transversâ subnigrâ, os versus dente valido armatum. *Cornua oculifera* longitudine thoracem cum abdomine æquantia, obscurè testacea, apice nigricantia; *setis* et *antennis* deteritis. *Oculi* obscuri. *Thorax* niger, nitidus: *collari* concolore. *Scutellum* testaceum; *spinis* 2 concoloribus (apicibus deteritis). *Spinæ metathoracicæ* 2, parvæ, flavæ. *Abdomen* thorace duplò longius, subclavatum, sordidè testaceum, pilosum, basi excavatione oblongâ notatum. *Pedes* testacei, graciles, femoribus anticis vix incrassatis, posticis apice spinigeris (saltem in pare ultimo). *Tibiæ* et *tarsi* pedum duorum anticorum obscuriores tibiisque duabus posticis basi et apice infumatis (rudimentum annuli pallidi exhibentibus). *Alæ* hyalinæ, immaculatæ, apice vix obscuriori. *Halteres* pallidi.

This very distinct species (which is in the cabinet of J. Curtis, Esq., F.L.S., by whom it has been kindly submitted to my examination, with a suggestion of the name which I have adopted above,) is very interesting from combining immaculate wings with armed femora and sides of the face, a combination which I have observed in no other species.

Species 17. DIOPSIS OBSCURA, *mihi*.

TAB. IX. Fig. 16.

D. nigra, abdomine posticè pedunculis oculiferis tibiisque anticis fuscis, pedibus fusco-rufescentibus, tibiis posticis fuscis in medio annulo pallido.

Long. corp. lin. $2\frac{1}{4}$. Expans. alar. lin. $3\frac{3}{4}$.

Habitat in Sierrâ Leonâ. *Afzelius*. In Mus. Soc. Linn. Lond.

Species parva, coloribus obscuris distincta. *Caput* nigrum, facie fuscâ subtùs inermi. *Pedunculi oculiferi* thorace paullò breviores, crassi, fuscì, apice nigri. *Oculi* obscuri. *Antennæ* fuscæ. *Thorax* niger; *collari* *scutello* que concoloribus. *Spinæ metathoracicæ* 2, nigræ; *scutellares* scutello

duplò longiores, fusco-piceæ. *Alæ* immaculatæ. *Abdomen* clavatum (thoracis latitudine in ejus parte posticâ), nigrum, apice piceo-fuscum. *Pedes antici* fusco-rufescentes, femoribus incrassatis, paginâ posticâ infuscatâ, tibiis fuscis, tarsis obscuris. *Pedes intermedii* fusco-rufescentes, femoribus inermibus. *Femora postica* fusco-rufescentia, apice obscura, inermia, tibiis posticis fuscis in medio annulo pallidiori, tarsis obscuris.

A single specimen of this insect is contained in the cabinet of the Linnean Society, and is the only individual belonging to this genus at present existing in the collection, into which it was evidently introduced by Sir J. E. Smith, the label attached to it, giving its habitat and the name of its captor, being in the handwriting of our late President.

Species 18. DIOPSIS CONFUSA. *Wied.*

“Picea, capite pedibusque ferrugineis, tibiis piceis.” *Wied.*

“Long. corp. lin. 3.” *Wied.*

“*Habitat* in Angola, Sumatra, Congo. Mus. Dom. de Sehestedt.” *Fabr.*

“Aus Afrika. In Königlichen Museum zu Kopenhagen.” *Wied.*

Diopsis ichneumonea. *Fabr. Syst. Antl.* 201. 1. *Dalman, Anal. Ent.* 3. 4.

Diopsis confusa. *Wiedemann, Auss. Zweifl. Ins.* vol. ii. p. 563. No. 7.

“Statura parva, elongata *Loxocera*. *Caput* orbiculatum, parvum, rufum: cornubus duobus parvis, erectis labii. *Oculi* pedunculo elongato, cylindrico, capite longiori inserti, globosi, nigri. *Thorax* gibbus, ater, postice spinis duabus elongatis, acutis. *Abdomen* atrum, compressum, basi angustatum. *Alæ* hyalinæ. *Pedes* testacei, tibiis posticis nigris. Variat forte sexu spinis thoracis atris et rufis.”

The above is the original Fabrician description of an insect, which, as indicated by Dalman and Wiedemann, is perfectly distinct from that of the Linnæan species, with which Fabricius confounded it. Wiedemann, drawing his original description from a specimen in the Royal Museum at Copenhagen, from Africa (Sehestedt's specimen?), states that the “labii cornua erecta” of Fabricius are a pair of horizontal porrected (“vorragende”) spines at the lower extremity of the face: the legs, he says, are neither rufous (rufi, “rothlich,”) nor testaceous (testacei, “zeigelroth”), as described by Fabricius, but of a rusty yellow colour

(“rostgelb” in the description, “ferrugineis” in the specific character given by Wiedemann), and that not only the posterior but all the tibiæ are pitchy-black (“pechschwarz”) with the anterior femora clavate and the tibiæ somewhat arched : Wiedemann, however, has been careless enough to omit the colour of the spines of the thorax in the specimen which he examined from Africa. As it is evident that Fabricius entirely disregarded the Linnæan description, in which the scutellar spines are mentioned as “*flavæ*,” but described these spines as either red or black, varying, probably, according to sex, it would seem that he did not introduce the rufous colour of these spines from the Linnæan description, but from an actual examination ; and as such a variation is clearly not sexual, it appears to me that he confounded two distinct species with clear wings, and consequently both different from the Linnæan species, under the name of the latter. Moreover, as Wiedemann has not noticed the colour of the spines in the African species, we may perhaps consider that they are of the general colour assigned to the insect, namely, piceous ; in which case, the variety described by Fabricius with red spines would in all probability be the insect from Sumatra, and consequently a species distinct from any described in this memoir.

Sectio IV. *Alæ fasciis integris.*

Species 19. DIOPSIS DALMANNI. *Wied.*

TAB. IX. Fig. 17.

Ferruginosa, alis fuscatis limpido fasciatis.

Long. corp. lin. 3. In Mus. Westermann.

Habitat in Javâ. *Wied. Illustr. Gen. Achias.*

Wiedemann, Auss. Zweifl. Ins. vol. ii. p. 560. No. 4. tab. 10^a. f. 4.

Lævis, juxta scutellum colore flavido abdominisque parte apicali dilatâtâ fuscescenti tincta. *Alæ* in medio obscurè fuscescentes, basi apiceque pallidiores, subfuscescentes, in parte obscuriori pone medium *alæ* fascia hyalina exstat e tribus maculis magnis composita, maculâ intermediâ inter nervos 3um et 4um paullò basin versus *alæ* extensâ ; inter medium et apicem *alæ* fascia altera recta vix conspicua hyalina, atque juxta nervum intermedium transversum fascia tertia latior adsunt. Pone et subtus scapulas utrinque spina brevis et subobtusa adest, pone quam altera brevior et vix conspicua

invenitur, atque scutellum ipsum spinis duabus tam brevissimis armatur, quas pictor omisit in delineatione insecti.

Wiedemann does not state the colour of the legs nor the habitat of this species; but he has supplied the latter omission in his memoir upon *Achias*, where he states it to be from Java. In addition to the characters given above, which I have translated from Wiedemann's German description, the following are observable in his figure. The ocular peduncles are about the length of the abdomen, and slender; the anterior femora are rather thicker than the others, and the base of the abdomen for more than half its length is narrow and linear, and is suddenly clavate, and as broad as the thorax.

Species 20. *DIOPSIS SYKESII*. G. R. Gray.

TAB. IX. Fig. 18, 19.

D. nigra, abdomine in medio pedunculisque oculiferis piceis, pedibus fulvescentibus, alis fuscis hyalino-fasciatis.

Long. corp. lin. $3\frac{1}{4}$ — $3\frac{3}{4}$. Expans. alar. lin. 6.

Habitat in Indiâ Orientali. *Sykes*. In Mus. Sykes, Gray, nostr.

Præcedenti alis fasciatis thoraceque 6-spinoso valdè affinis, at colore nigro spinisque scutellaribus longis diversa. *Caput* nigrum, vix nitidum, os versus attenuatum, dente subrecto utrinque armatum, facie in medio convexâ, lineâ longitudinali elevatâ. *Haustellum* pallidum. *Pedunculi oculiferi* in speciminibus robustioribus capite cum thorace paullò longiores, sed in aliis longitudinem corporis ferè æquant, piceo-nigri, spinâ unâ in medio, alterâque ad apicem supra oculos. *Antennæ* fuscæ. *Oculi* rufi. *Thorax* totus niger, opacus, investimento sericeo-subcinerascenti: *collari* et *scutello* concoloribus. *Mesothorax* supra locum insertionis alarum utrinque spinâ validâ, acutâ, piceâ armatum; alterâque breviori, obtusâ metathoracicâ: *scutello* etiam spinis duabus illo triplò longioribus, piceis instructo. *Abdomen* valdè clavatum, præsertim in individuis robustioribus, nigrum, apice articuli 1mi (longissimi) latè piceo, et utrinque (pone lineam articulationem præcedentem referentem) maculâ subpallidâ sericanti in certo situ conspicienda. *Alæ* fuscescentes, apicem versus obscuriores, sed basin versus ferè ad nervum medium transversum hyalinæ,

tantum sub nervo interno paullò obscuriores sunt, pone medium fascia hyalina irregularis basin versus arcuata exstat; etiam ante apicem alarum fascia altera ferè recta hyalina apparet. *Pedes* fulvescentes, femoribus anticis in omnibus æquè subincrassatis; tibiis anticis piceis tarsisque subfuscis, femoribus 4 posticis ad apicem inermibus et obscurioribus; tibiis tarsisque etiam obscuris.

This beautiful species was collected in great numbers in India by Lieut.-Col. W. H. Sykes, F.R.S., &c., in honour of whom it has been suggested to me by Mr. G. R. Gray that it should be designated; a suggestion which I have much pleasure in adopting.

The former gentleman has kindly furnished me with the following notice respecting the habitat and habits of this species.

“*Habitat.* The hill fort of Hurreechunderghur in the western ghauts of the Deccan, at an elevation of 3900 feet above the level of the sea. Lat. 19° 23' N., long. 73° 40' E.

“The insect affects chasms or ravines in the lofty woods which encircle the mountain in belts in various places. Where the sunbeams occasionally pierce the woods and fall upon isolated or salient rocks in the above localities, they are seen in myriads, either poisoning themselves in the rays, or reposing on the spots on which the rays fall.”

Species 21. *DIOPSIS* (SPHRYRACEPHALA) *BREVICORNIS.* Say.

TAB. IX. Fig. 20.

D. nigra, obscura, antennis pedibusque ferrugineo-flavidis, alis fasciâ apiceque fuscis, pedunculis oculiferis brevissimis.

Long. corp. lin. $2\frac{1}{4}$ ♀. *Wied.* $\frac{3}{4}$ ths of an inch. *Say.*

Habitat in Pennsylvaniâ Americæ Borealis. *Say.* In Mus. Say, Wiedemann.

Diopsis brevicornis. *Say*, in *Journ. Acad. Nat. Sciences*, vol. i. 1817, p. 23.

Achias brevicornis. *Say* in *litt.*

Diopsis brevicornis. *Wied. Auss. Zweifl. Ins.* vol. ii. p. 563. No. 8. *Illustr. Gen.*

Achias, pl. 2. *Griffith, Transl. "Règne Animal,"* No. 34. p. 774. pl. 62. fig. 2.

Sphyracephala brevicornis. *Say*, *American Entomology*, vol. iii. pl. 52.

Caput rufescens, vertice fusco. *Pedunculi oculorum* brevissimi (singulo longitudinem inter eorum bases haud æquanti) crassissimi, fusco-nigri. *Antennæ* in medio frontis insertæ, articulo 3tio rotundato, compresso, apice setigero. *Thorax* niger, cinereo cinctus. *Spinæ scutellares* 2 rufescentes et 2 laterales nigrae (inter alarum basin et halteres obviæ, at quàm in præcedentibus breviores). *Alæ* hyalinæ, fasciâ fuscescenti, transversâ, irregulari (præsertim ad marginem internum) pone medium alæ positâ, hæc fascia ad nervum intermedium transversum extendit et sub nervo 2do longitudinali magis est obscura; apex ipse alarum maculâ fuscescenti angulum basin versus alæ formante distinguitur. *Pedes* rufescentes, femoribus tibiisque ad apicem nigricantibus; femora antica incrassata, piceo-nigra, femoribus posticis simplicibus. *Halteres* albi. *Abdomen* nigrum, immaculatum, clavatum.

Say, in the work first above quoted, described this insect as a *Diopsis*, and states that he took a single specimen in May 1817, seated on a leaf of the Skunk Cabbage (*Pothos fetida*) near the Wissahickon Creek, a few miles from Philadelphia. Subsequently, however, it would seem that he regarded it as an *Achias*, as Wiedemann states that he received it from him under the name of *Achias brevicornis*, adding that, from the form and situation of the antennæ, it appeared to him rather to belong to *Diopsis*. Say afterwards discovered it in profusion in crevices of rocks on the banks of the Missouri, and published a figure of it in the 3rd volume of his American Entomology, under the new generic name of *Sphyracephala*, distinguished from *Diopsis* by the shortness of the ocular peduncles, and by having the "antennæ inserted in front, the third joint rounded and compressed, setigerous at the tip." Other characters are pointed out as distinguishing this genus from *Achias*, as the spinose thorax and scutellum; whence it appears, as Say observes, to be more intimately allied to *Diopsis* than to *Achias*. The geographical situation of the species, however, seems to indicate a type distinct from either of these two groups.

